JUN 3 3 2003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Patents

In re Patent Application of
Outi Vaarala et al.
Serial No. 09/806,324
Filed: March 29, 2001

Art Unit: 1761
Examiner Leslie A. Wong

METHOD OF PROCESSING A PROTEINOUS MATERIAL, A PRODUCT SO OBTAINED, AND USE THEREOF

DECLARATION

I, Olli Tossavainen, being the inventor both of the invention described and claimed in the subject patent application and of the invention described and claimed in WO 98/48640, depose and state the following facts with respect to the non-obviousness of the method of the present invention as regards removing bovine insulin from a protein material originating from cow's milk.

Comparative tests concerning effectiveness of certain resins in removing of bovine insulin (BI) from a fat-free test solution were carried out using (A) one strong cation exchange resin used in WO 98/48640 and (B) two macroporous adsorption resins used in the subject patent application.

In the tests the test solution was fat-free and contained 0.01 mg BI/ml in water. The pH of the test solution was adjusted to 4.0, 5.8 or 6.4 by using 0.06M citric acid buffer. This buffer has same conductivity as normal sweet whey (5 mS cm^{-1}). Each test solution was contacted at room temperature with different resins in a mixing vessel, i.e. in an Erlenmeyer flask on a shaker. The weight ratio of the bovine insulin to be removed from the solution to the resin was about 1:20 000.

Suitable strong cation exchange resins used in WO 98/48640 include Amberlite C-20, Spherosil S, Amberlite IR-120 and Finex VO 7 as set

forth on page 4, lines 19-22 in WO 98/48640. Amberlite-IR-120 was used in present tests as a strong cation exchange resin used in WO 98/48640 (A).

It should be noted that there are many kinds of Amberlite resins. Amberlite C-20 and Amberlite IR-120 are both gel type strong cation exchange resins without any information of pore size. However, these two resins are not macroporous adsorption resins.

Suitable macroporous adsorption resins used in the subject patent application include Dowex XUS 40285.00 (pore size about 50 Å) and Amberlite XAD 7 (pore size between 450 and 500 Å). Both Dowex XUS 40285.00 and Amberlite XAD 7 was used in present tests as macroporous adsorption resins used in the subject patent application (B).

The degree of bovine insulin (BI) removal from above-mentioned test solution with above-mentioned three resins were following:

Resin	**Degree of BI removal (%)**		
	pH 4.0	**pH 5.8**	**pH 6.4**
Macroporous adsorption resin (B): Amberlite XAD 7	100	100	100
Macroporous adsorption resin (B): Dowex XUS 40285.00	100	100	100
Gel type strong cation exchange resin (A): Amberlite IR-120	58,1	22,2	0

Conclusion:

When using a macroporous adsorption resin used in the subject patent application (B) the degree of bovine insulin (BI) removal from the fat-free test solution was 100%, however, when using a strong cation exchange resin used in WO 98/48640 (A) the degree of bovine insulin (BI) removal from the fat-free test solution was much lower, i.e. only from 0% to 58,1%.

Thus the method of the present invention for removing bovine insulin from a certain liquid fat-free material using only one resin, i.e. a certain macroporous adsorption resin, is much more practical than the multi-step process of WO 98/48640 using two different resins, i.e. a strong cation exchange resin in step (a) and a hydrophobic adsorption resin in step (d) after enzymatic hydrolysis in step (c1).

I further hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of the Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: May 23, 2003

Olli Tossavainen